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(54) **NAUTICAL ANCHOR**

(57) Nautical anchor comprising three flat pieces, consisting of a penetration nail (2), a positioning clamp (3) and a supporting arm (4), which have a configuration that allows, quickly, easily, and without the need for the use of tools for it, the mutual coupling of the same, being firmly joined and arranged symmetrically with respect to a central vertical longitudinal plane (p) and facing each other, in their working position, so that the nail (2) and the arm (4) are completely perpendicular to each other, the nail (2) being located in a horizontal plane and the arm (4) in a longitudinal vertical plane, while the clamp (3) is located in an inclined vertical plane, facing transversely to the arm (4) and forming an angle (a) greater than 90° with respect to the nail (2). Preferably, the nautical anchor further comprises the inclusion of a fixing means (5) that is fastened by a pin (6) in a hole (40) of the rear end (41) of the supporting arm (4), to ensure the union between it and the positioning clamp (3).

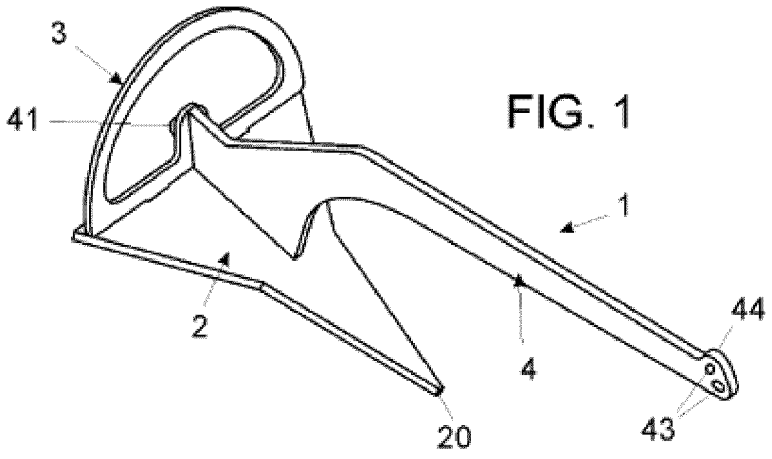

FIG. 1

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Description

THE OBJECT OF THE INVENTION

[0001] The invention, as expressed in the statement of the present specification, refers to a nautical anchor that provides, to the function for which it is intended, advantages and characteristics, which are described in detail below, which suppose an improvement of the current state of the art.

[0002] The object of the present invention lies in a nautical anchor that, applicable for both professional and sports, or industrial use, has the particularity of having a structural configuration based simply on three flat pieces coupled together quickly, easily and directly, that is, without the use of tools except for a simple snap shackle, which gives them advantages over what is currently known, both for their fabrication, storage and use, while providing a guaranteed grip on the seabed thanks to the design of said pieces.

THE FIELD OF APPLICATION OF THE INVENTION

[0003] The field of application of the present invention is framed within the sector of the industry dedicated to the manufacture of nautical articles, focusing particularly on the field of anchors or anchors for vessels.

BACKGROUND OF THE INVENTION

[0004] Traditionally, the market for nautical or marine anchors for professional and sports uses was dominated by models that based their operation on the weight of the equipment combined with the resistance provided by one or more nails when penetrating to a greater or lesser extent the seabed. Examples of such traditional models are CQR, Danforth, Hall, Fisherman, etc. and derivatives thereof.

[0005] During the last decades new designs have appeared that, through a greater exposure surface, greater power of penetration and grip on the seabed and proportionally less weight, have significantly perfected the technique of anchoring the vessels. Examples of such modern high-grip models are: Bruce, Delta, Mason, Rocna, Bugel, Sarka, Mantus, Excel, Spade etc.

[0006] The new products are built with the use of various materials (steel, aluminum, etc.) and various techniques (cut sheet, casting, bending, forging, etc.). Some form a single body without moving parts and others have one or more moving parts that allow a game between the pieces and their position. The joints and assembly between the different parts are made by fixed welding and in some cases by using pins, screws and nuts, or rivets.

[0007] There are some folding models that allow them to be assembled and disassembled into simple parts to obtain a benefit in their transport, storage or stowage on vessels. (Cobra, Fortress, etc.).

[0008] However, although there are in the current state of the art anchor models that effectively solve the anchoring operation of the vessels, there is still a need for a model that improves the manufacture, storage and transport, given the volume and weight of the same, and at the same time allows its users an easier stowage in the vessels, as a main, secondary or reserve anchor, guaranteeing an especially fast assembly for its use without the possibility of errors, without the use of tools and without this implying a detriment to its resistance and operational capacity, the objective of the present invention being the development of an anchor that provides said characteristics.

[0009] On the other hand, and as a reference to the current state of the art, it should be noted that, at least on the part of the applicant, the existence of any other anchor that has technical, structural and constitutive characteristics equal or similar to those of the one claimed herein is unknown.

SUMMARY OF THE INVENTION

[0010] The nautical anchor that the invention proposes is configured as the ideal solution to the aforementioned objective, the characterizing details that make it possible and that distinguish it are conveniently included in the final claims that accompany the present description.

[0011] Specifically, what the invention proposes is an anchor that, in a characterizing way, is composed of three pieces: a penetration nail, a positioning clamp and a supporting arm, which are designed to be able to be coupled to each other, being arranged symmetrically with respect to a central vertical longitudinal plane, in their working position.

[0012] Preferably, said three pieces constituting the anchor of the invention are manufactured from standard sheet of different thicknesses (in their different sizes) and by cutting it.

[0013] The nature of the sheet may be diverse, provided that it gives sufficient strength, toughness and weight to the assembly for the purpose it has, and may be both metallic (Steel, aluminum, Stainless Steel. Bronze, etc.), such as plastic materials, or composites (Teflon, Nylon, plastic laminates, etc.), and even their combination: Aluminum/Steel, Nylon/Steel, etc.

[0014] The three pieces of which the anchor consists are designed in such a way that by coupling and assembling them together and securing them with a single and simple fixing means such as a shackle or a carabiner, arranged at the rear end, which in turn allows the connection of one or more anchors in tandem, the assembly is quickly constituted into a solid and self-supporting three-dimensional unit, without play or movement of any kind, capable of safely resisting disengagement or deformation under the conditions required of the anchors in the uses described.

[0015] The geometry of the three pieces, once assembled into a single body, allows the anchor to quickly

adopt its stable working position with the nail in contact with the seabed, thanks to the positioning clamp. From this point, and as it fractions through the anchoring line and the supporting arm, the nail penetrates the bed obtaining a grip equal to or greater than the draw force.

[0016] The adequate distribution of weights by combination of thicknesses and even different materials of the three pieces, and their shape and positioning angle with respect to the seabed, optimize the correct work of the unit, even without the need for ballast or additional weight in its lower part, existing in other models of the art.

[0017] Unlike other techniques, one of the advantages of the anchor of the invention is the fact that the arc that forms the positioning clamp is made of flat plate and not tubular as in other models. This feature gives the assembly greater ease of positioning and stabilization, by providing a rotational thrust force during its drag on the seabed, when the anchor falls in an inverted shape.

[0018] Another advantage is that, once positioned on the seabed and in a working situation, in the event of an eventual loss of the fixing means, such as a shackle or a carabiner, for subsequent securing of the unit, the anchor remains resistant to draw without losing effectiveness.

[0019] In addition, the shape of its supporting arm and the distribution of weights facilitates the fall by itself from the bow sheave of the vessel at the time of the start of the anchoring maneuver, by the simple release of the line and without the intervention of the people in the maneuver. The same in terms of its recovery and positioning during the lifting maneuver.

[0020] Preferably, the distal end of the support arm has two holes for fixing the anchor ring, which allows two different working angles between the penetration nail of the anchor and its line with respect to the seabed, allowing its modification for a more efficient work depending on the hardness of the bottom or its retention capacity and without the need to modify the position or assembly of the different parts.

[0021] A third hole located in the arm, in the part closest to the positioning clamp, coinciding or not with the hole for the passage of the aforementioned fixing means, such as a shackle or a carabiner, allows the fixing of the anchoring line therein when it is desired to use the fuse system for the recovery of the anchor in case of rock fill.

[0022] In any case, one of the main advantages of the anchor object of the invention is given by the fact that, unlike other models of the art, the anchor of the invention lacks joining welds and does not require screws, bolts, nuts, rivets, or additional elements or another joining method between the three parts that form it other than the fixing means, such as a shackle or a carabiner, which is inserted at its end. In addition, the absence of joint welds facilitates the mixing of different materials in the unit, or the use of heterogeneous materials that cannot be welded together.

[0023] On the other hand, also unlike other models in the art, the different parts that make up the anchor, when unassembled, occupy a two-dimensional and limited flat space that allows them to be housed inside a flat bag or container, and the fact that for their operation they can be assembled simply and very quickly, give it a remarkable advantage over other models if it is used as a reserve anchor on vessels, as it can be stowed efficiently and at the same time be ready for immediate or urgent deployment.

[0024] Unlike other models in the art, the anchor of the invention, since all its parts are manufactured from standard sheet in a flat shape and since they are coupled together quickly, easily, and without the use of any type of tool, the production, transport and storage processes are favorably resolved, granting very remarkable advantages for trade logistics, regarding to other models.

[0025] Finally, it should be noted that the anchor described also has the advantage that it can be manufactured in different sizes, materials and weights so that they can be adapted to the different types of vessel depending on their length, displacement and characteristics, and is even scalable to large size for anchoring operations of large vessels, prospecting platforms, aquaculture, industry, etc. The design of the set and the ratios between the different measures and parts of the anchor remain the same in the different sizes, the materials and final weight can vary, for compliance with the regulatory requirements relating to the safety and anchoring of vessels.

DESCRIPTION OF THE DRAWINGS

[0026] To complement the description that is being made and in order to help a better understanding of the characteristics of the invention, this specification is attached, as an integral part thereof, some drawings in which, with an illustrative and non-limiting nature, the following has been represented:

Figure number 1.- Shows a schematic perspective view of a first example of embodiment of the nautical anchor object of the invention, represented once the parts that compose it have been assembled, appreciating its general configuration;

Figure number 2.- Shows a side elevation view of the example of the anchor of the invention shown in figure 1;

Figure number 3.- Shows a rear elevation view of the example of the anchor of the invention shown in figures 1 and 2;

Figure number 4.- Shows an exploded view of a similar example of the anchor object of the invention to that shown in figures 1 to 3, in this case the configuration and shape of each of the different coupling parts that it comprises;

Figure number 5.- Shows a side elevation view of the example of the anchor, according to the invention,

shown in figure 4, in this case once assembled and including the fixing means, in this case snap shackle;

Figure number 6.- Shows a perspective view of another example other than the nautical anchor object of the invention, in this case an example in which the piece that forms the positioning clamp is totally flat and the angle of inclination with the nail is acquired by means of the shape of the lateral holes of the latter;

Figures 7 and 8.- Show side and front elevational views of the example of the anchor shown in Figure 6; and

Figures 9 and 10.- Show enlarged views of the coupling detail between the clamp piece and the nail piece of the anchor, according to the example of figures 6 to 8.

PREFERRED EMBODIMENT OF THE INVENTION

[0027] In view of the aforementioned figures, and according to the numbering adopted therein, two non-limiting examples of embodiment of the nautical anchor of the invention can be observed, which comprises what is described in detail below.

[0028] Thus, as seen in said figures, the anchor (1) of the invention essentially comprises three substantially flat pieces, consisting of a penetration nail (2), a positioning clamp (3) and a supporting arm (4), which have a configuration such that it allows, quickly, easily, and without the use of any type of tool for it, the mutual coupling thereof, being firmly joined and arranged symmetrically with respect to a central vertical longitudinal plane (p) (represented in Figure 3 by a dotted line) and facing each other, substantially perpendicularly, in the three planes of space, in their working position, and as shown in figures 1, 2, 3 and 5 or figures 6, 7 and 8.

[0029] More specifically, said pieces, once coupled in the working position, face each other so that the nail (2) and the arm (4) are completely perpendicular to each other, with the nail (2) lying in a horizontal plane and the arm (4) in a longitudinal vertical plane, while the clamp (3) lies in an inclined vertical plane, facing transversely to the arm (4) and forming an angle (a) greater than 90^{Q} with respect to the nail (2).

[0030] However, preferably, the anchor further comprises the inclusion of a fixing means (5), such as a shackle or a carabiner, which is fastened by a pin (6) in a hole (40) of the rear end (41) of the supporting arm (4), to ensure the union between it and the positioning clamp (3).

[0031] Preferably, as can be seen in Figure 4, the penetration nail (2) has a substantially triangular plantar configuration, with a pointed front end (20) that determines the interlocking zone, being provided on the opposite side (21) to said tip (20) with at least one central hole (22), arranged perpendicularly to said side (21), which is suitable to receive a lower hook-shaped protrusion (42) of the supporting arm (4) and, at least one hole (23) (Figure 4) or a lateral protrusion (23') (Figure 6), preferably two, arranged parallel to said side (21), suitable to engage with at least one flap (30) of the positioning clamp (3).

[0032] For its part, the piece that constitutes the positioning clamp (3), preferably, has a plantar configuration in the form of a semicircular rim and has at least one flap (30) at the rectilinear base (31) of said semicircular rim, suitable for fitting with the hole (23) or the lateral protrusion (23') of the nail (2), and a central hole (32) made in a peninsula (33) of material provided for this purpose in the center of the hollow of the semicircular fence, suitable for receiving a protrusion of the rear end (41) of the supporting arm (4).

[0033] And, in turn, the support arm (4), preferably, has an elongated configuration that has a protrusion at its rear end (41), preferably provided with a hole (40) for the pin (6) of the fixing means (5), such as a shackle or a carabiner, and suitable to fit in the central hole of the clamp (3), a lower protrusion in the form of a hook (42), suitable to fit in the central hole (22) of the nail (2) and, at least, a perforation (43) at the opposite distal end (44), suitable to insert the ring or sling in which the anchoring end is held, although, preferably, said distal end (44) has two perforations (43) to be able to locate the sling in two different positions, as desired.

[0034] The perforations (43) to be able to locate the anchor ring allow a small variation in the working angle of the anchor assembly with respect to the seabed, which can be useful to optimize the performance in different types of bed.

[0035] Referring to Figures 1 to 5, it is observed how, in an exemplary embodiment of the anchor (1) of the invention, the nail (2) has two side holes (23) suitable for receiving respective flaps (30) that emerge from the rectilinear base (31) of the positioning clamp (3), said flaps (30) being bent with respect to the rest of the clamp piece (3) with an angle that defines the angle (a) of inclination of said piece (3) with respect to the penetration nail (2).

[0036] And , according to figures 6 to 10, it is observed how, in another embodiment of the anchor (1), the nail (2) has two lateral protrusions (23') suitable to fit into respective recesses (33) provided in the flap (30) of the clamp (3) which, in turn, defines its rectilinear base (31), said flap (30) being unfolded with respect to the rest of the clamp piece (3) so that the entire clamp piece (3) is completely flat and the angle (a) of inclination that it presents in its coupling with the nail (2) is defined by the inclination of the recesses (33) where the lateral protrusions (23') of the nail (2) support.

[0037] With all this, the coupling between the three pieces (2, 3, 4) of the anchor (1) object of the invention for its assembly is obtained by carrying out the following operations:

- First, inserting the hook-shaped protrusion part (42) of the supporting arm (4) into the central hole (22) of the penetration nail (2).

- Performing the subsequent coupling of the positioning clamp (3) by fitting its at least one flap (30) in the at least one corresponding hole (23) or lateral protrusion (23') of the nail (2).

- And then inserting the protrusion of the rear end (41) of the arm (4) into the central hole (32) of the clamp (3).

[0038] Then, by placing the pin (6) of the fixing means (5), such as a shackle or a carabiner, through the hole (40) provided for this purpose in the protrusion of the rear end (41) of the supporting arm (4) once it has passed through the central hole (32) of the clamp (3), the assembly is held stably and securely, not being possible to disengage without the destruction of the unit.

[0039] Preferably, the three pieces (2, 3, 4) of the anchor (1) are pieces of standard sheet metal of variable thickness, as appropriate, obtained by cutting it, which can be metal, plastic material or a combination of both types of material.

[0040] Having sufficiently described the nature of the present invention, as well as the way of putting it into practice, it is not considered necessary to make its explanation more extensive for any person skilled in the art to understand its scope and the advantages derived from it.

Claims

1. Nautical anchor **characterized by** comprising three flat pieces, consisting of a penetration nail (2), a positioning clamp (3) and a supporting arm (4), which have a configuration that allows, quickly, easily, and without the need for the use of tools for it, the mutual coupling of the same, being firmly joined and arranged symmetrically with respect to a central vertical longitudinal plane (p) and facing each other, in their working position, so that the nail (2) and the arm (4) are completely perpendicular to each other, the nail (2) being located in a horizontal plane and the arm (4) in a longitudinal vertical plane, while the clamp (3) is located in an inclined vertical plane, facing transversely to the arm (4) and forming an angle (a) greater than 90° with respect to the nail (2).

2. Nautical anchor, according to claim 1, **characterized by** further comprising the inclusion of a fixing means (5) that is fastened by a pin (6) in a hole (40) of the rear end (41) of the supporting arm (4), to ensure the union between it and the positioning clamp (3).

3. Nautical anchor, according to claim 1 or 2, **characterized in that** the penetration nail (2) has a substantially triangular plantar configuration, with a pointed front end (20) that determines the interlocking zone, being provided on the opposite side (21) to said tip (20) with at least one central hole (22), arranged perpendicularly to said side (21), which is suitable to receive a lower hook-shaped protrusion (42) of the supporting arm (4), and at least one hole (23) or a lateral protrusion (23'), arranged parallel to said side (21), suitable to engage with at least one flap (30) of the positioning clamp (3).

4. Nautical anchor, according to claim 3, **characterized in that** the positioning clamp (3) has a plantar configuration in the form of a semicircular fence and has at least one flap (30) at the rectilinear base (31) of said semicircular fence, suitable for fitting with the hole (23) or the lateral protrusion (23') of the nail (2), and a central hole (32) made in a peninsula (33) of material provided for this purpose in the center of the hollow of the semicircular fence, suitable for receiving a protrusion of the rear end (41) of the supporting arm (4).

5. Nautical anchor, according to claims 3 and 4, **characterized in that** the nail (2) has two lateral holes (23) suitable for receiving respective flaps (30) that emerge from the rectilinear base (31) of the positioning clamp (3), said flaps (30) being bent with respect to the rest of the clamp piece (3) with an angle that defines the angle (a) of inclination of said piece (3) with respect to the penetration nail (2).

6. Nautical anchor, according to claims 3 and 4, **characterized in that** the nail (2) has two lateral protrusions (23') suitable to fit into respective recesses (33) provided in the flap (30) of the clamp (3) which, in turn, defines its rectilinear base (31), said flap (30) being unfolded with respect to the rest of the clamp piece (3) so that the entire clamp piece (3) is completely flat and the angle (a) of inclination that it presents in its coupling with the nail (2) is defined by the inclination of the recesses (33) where the lateral protrusions (23') of the nail (2) support.

7. Nautical anchor, according to claim 3 and 4, or 5, or 6, **characterized in that** the support arm (4) has an elongated configuration that has a protrusion at its rear end (41), and suitable to fit in the central hole of the clamp (3), a hook-shaped lower protrusion (42), suitable to fit in the central hole (22) of the nail (2) and, at least, a perforation (43) at the opposite distal end (44), suitable to insert a ring or anchor ring.

8. Nautical anchor, according to claim 7, **characterized in that** the distal end (44) of the arm (4) has two perforations (43) to be able to locate the anchor ring in two different positions, as desired.

9. Nautical anchor, according to claim 7 or 8, **characterized in that** the protrusion of the rear end (41) of the arm (4) is provided with a hole (40) for the pin (6) of the fixing means (5).

10. Nautical anchor, according to any one of the preceding claims, **characterized in that** the three pieces (2, 3, 4) are pieces of sheet metal of variable thickness, obtained by cutting it.

11. Nautical anchor according to any one of the preceding claims, **characterized in that** the three pieces (2, 3, 4) are metallic, of plastic material or a combination of both types of material.

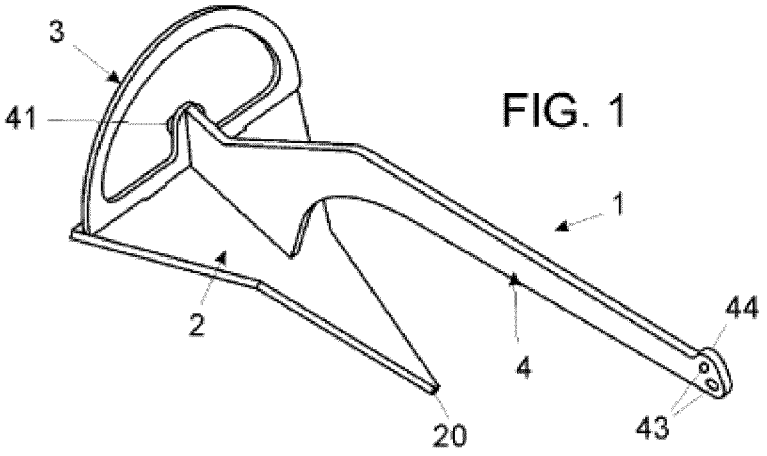


FIG. 1

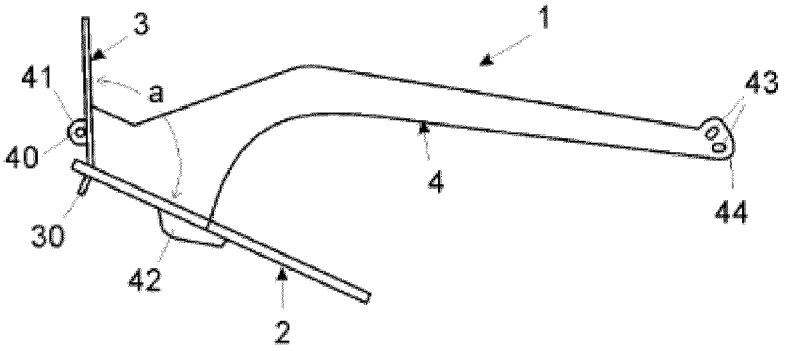


FIG. 2

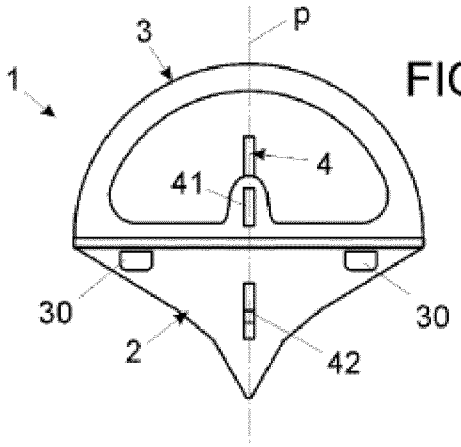


FIG. 3

FIG. 4

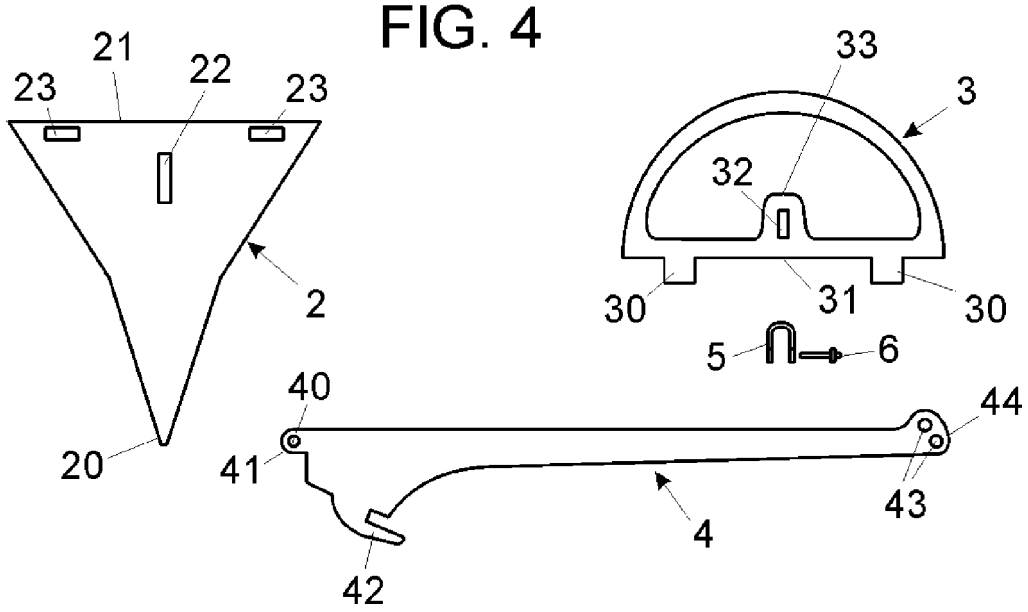


FIG. 5

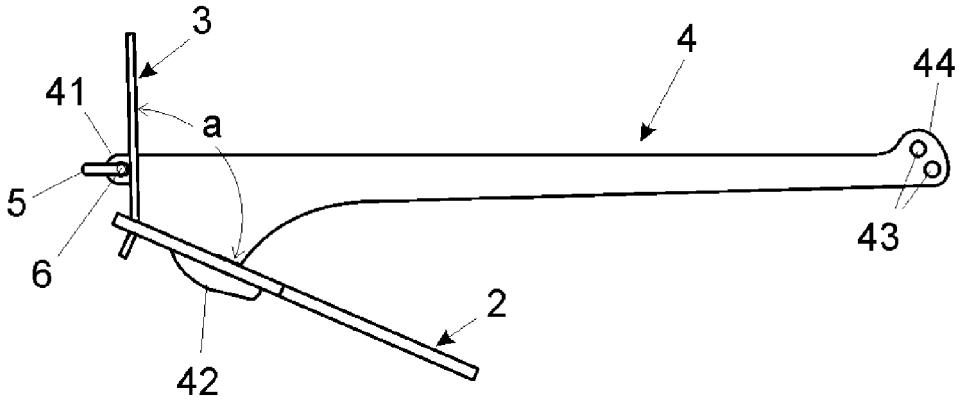


FIG. 6

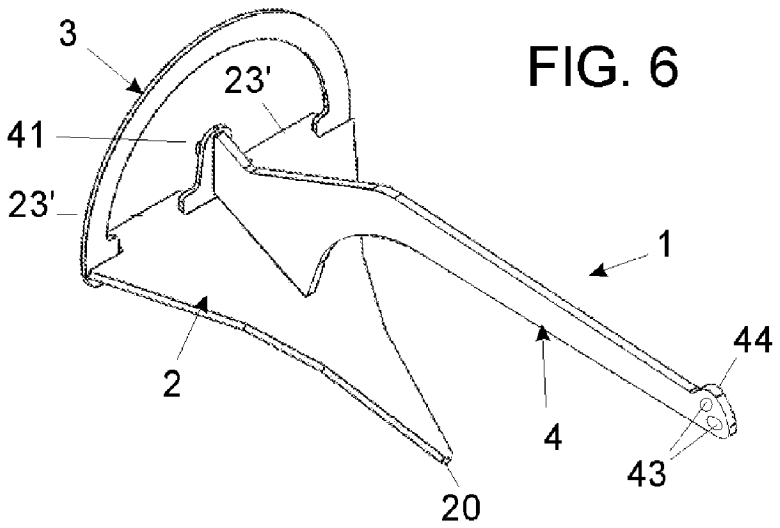


FIG. 7

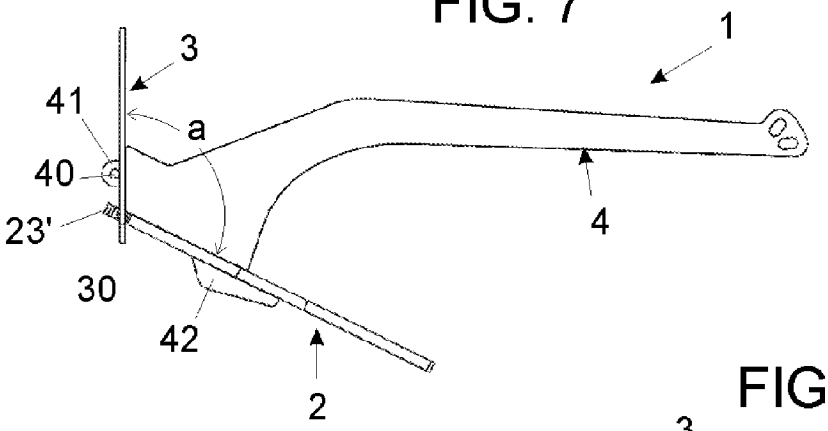


FIG. 8

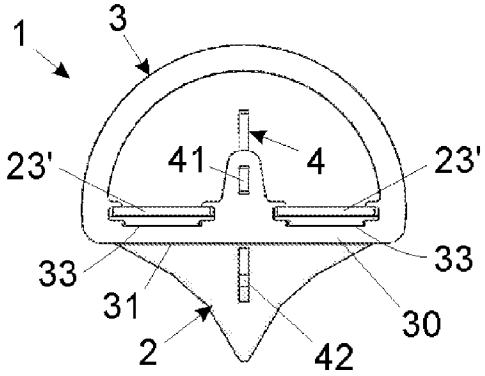


FIG. 9

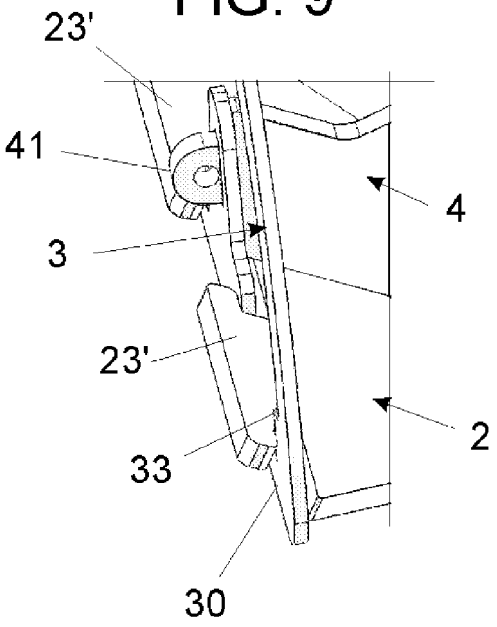
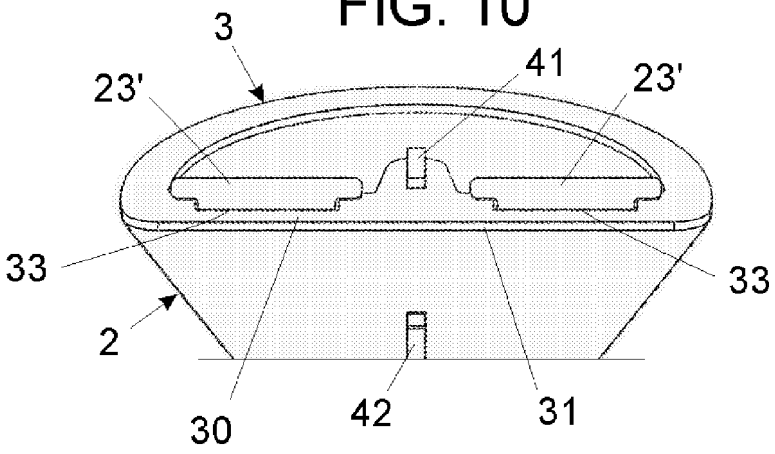


FIG. 10



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2023/070416

A. CLASSIFICATION OF SUBJECT MATTER

B63B21/32 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 113479289 A (QINGDAO DINGYONG HARDWARE PRODUCTS CO LTD) 08/10/2021, the whole document.	1 - 11
A	Mantus catalogue [on line]. Mantus Marine. 23/12/2018 [retrieved on 02/08/2023]. Retrieved from <URL: https://web.archive.org/web/20181223003851/https://www.mantusmarine.com/wp-content/uploads/2017/12/Mantus-Catalog-2017.pdf>	1 - 11
A	US 2013036963 A1 (KUTSEN GREGORY) 14/02/2013, paragraphs [0024] - [0003]; figures.	1 - 5, 10, 11
A	US 6041731 A (WILLIS JOHN A) 28/03/2000, Column 2, line 44 - column 5, line 17; figures 1 - 3.	1 - 3, 11

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Date of the actual completion of the international search	Date of mailing of the international search report
03/08/2023	**(09/08/2023)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer V. Población Bolaño Telephone No. 913498493

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